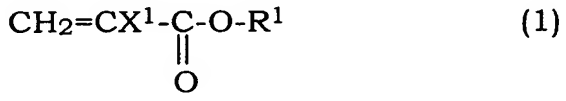
# CLAIMS

1. A photofunctional optical material comprising:

(A) a fluorine-containing acrylate polymer which is prepared by polymerizing:

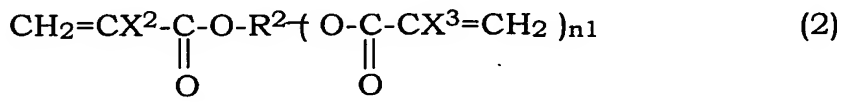
(a1) at least one selected from fluorine-containing acrylates represented by the formula (1):



$$CH_2=CX^1-\underset{\underset{O}{\|}}{C}-O-R^1 \qquad (1)$$

wherein $X^1$ is H, F, Cl, $CH_3$ or $CF_3$; $R^1$ is at least one selected from a monovalent hydrocarbon group which has 1 to 50 carbon atoms and may have ether bond and a monovalent fluorine-containing hydrocarbon group which has 1 to 50 carbon atoms and may have ether bond; at least either $X^1$ or $R^1$ contains fluorine atom,

(a2) at least one selected from polyfunctional acrylates represented by the formula (2):



$$CH_2=CX^2-\underset{\underset{O}{\|}}{C}-O-R^2\text{-}\left(\,O-\underset{\underset{O}{\|}}{C}-CX^3=CH_2\,\right)_{n1} \qquad (2)$$

wherein $X^2$ and $X^3$ are the same or different and each is H, F, Cl, $CH_3$ or $CF_3$; n1 is an integer of 1 to 6; $R^2$ is a (n1 + 1)-valent organic group having 1 to 50 carbon atoms, and

(n) at least one selected from monomers being copolymerizable with said (a1) and (a2),

and contains a structural unit A1 derived from the monomer (a1), a structural unit A2 derived from the monomer (a2) and a structural unit N derived from the monomer (n) in amounts of from 20 to 99.9 % by mole, from 0.1 to 80 % by mole and from 0 to 60 % by mole, respectively, and

(B) a rare earth metal compound,

in which (A) and (B) are contained in amounts of from 1 to 99.99 % by mass and from 0.01 to 99 % by mass, respectively.

2. The photofunctional optical material of Claim 1, wherein the fluorine content of the fluorine-containing acrylate polymer (A) is not less than 30 % by mass.

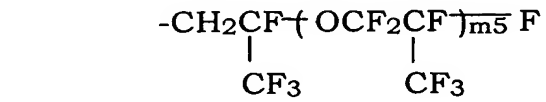
3. The photofunctional optical material of Claim 1 or 2, wherein $R^1$ in the fluorine-containing acrylate of the formula (1) constituting the fluorine-containing acrylate polymer (A) is a fluorine-containing alkyl group which has ether bond and contains a structure represented by the formula (1-1):

$$-(OCF_2)_{m1}-(OCF_2CFZ^1)_{m2}-(OCF_2CF_2CF_2)_{m3}-(OCH_2CF_2CF_2)_{m4}- \quad (1\text{-}1)$$

wherein $Z^1$ is F or $CF_3$; m1, m2, m3 and m4 are 0 or integers of 1 to 10 and m1 + m2 + m3 + m4 is an integer of 1 to 10.

4. The photofunctional optical material of Claim 3, wherein $R^1$ in the fluorine-containing acrylate of the formula (1) constituting

the fluorine-containing acrylate polymer (A) is a fluorine-containing alkyl group which has ether bond and is represented by the formula (1-2):



(1-2)

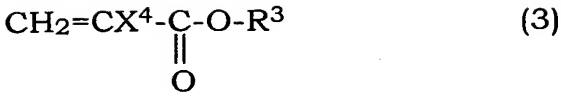
wherein m5 is an integer of 1 to 5.

5. The photofunctional optical material of any of Claims 1 to 4, wherein $R^2$ in the polyfunctional acrylate of the formula (2) constituting the fluorine-containing acrylate polymer (A) is a (n + 1)-valent organic group having 3 to 50 carbon atoms in which a part or the whole of hydrogen atoms may be substituted by fluorine atoms and contains at least one moiety selected from moieties of aromatic hydrocarbon structure which may have hetero atom and moieties of aliphatic cyclic hydrocarbon structure which may have hetero atom.

6. The photofunctional optical material of any of Claims 1 to 5, wherein the rare earth metal compound (B) is a rare earth metal complex.

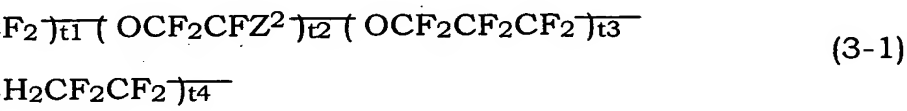
7. A composition which comprises:

(a3) at least one selected from fluorine-containing acrylates represented by the formula (3):



(3)

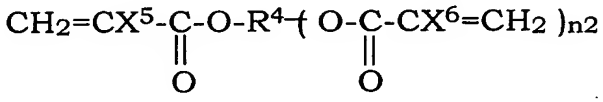
wherein $X^4$ is H, F, Cl, $CH_3$ or $CF_3$; $R^3$ is a fluorine-containing alkyl group which has 2 to 50 carbon atoms and ether bond and contains a structure represented by the formula (3-1):



(3-1)

wherein $Z^2$ is F or $CF_3$; t1, t2, t3 and t4 are 0 or integers of 1 to 10 and t1 + t2 + t3 + t4 is an integer of 1 to 10,

(a4) at least one selected from polyfunctional acrylates represented by the formula (4):



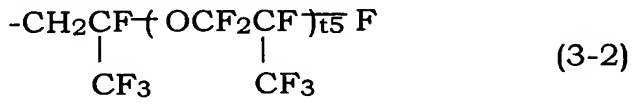
(4)

wherein $X^5$ and $X^6$ are the same or different and each is H, F, Cl, $CH_3$ or $CF_3$; n2 is an integer of 1 to 6; $R^4$ is a (n2 + 1)-valent organic group having 1 to 50 carbon atoms, and

(b) a rare earth metal compound,

in which ((a3) + (a4)) is contained in an amount of from 1 to 99.99 % by mass and (b) is contained in an amount of from 0.01 to 99 % by mass and when the number of moles of (a3) plus the number of moles of (a4) is assumed to be 100, a molar ratio (a3)/(a4) is 20/80 to 99/1.

8. The composition of Claim 7, wherein $R^3$ in the fluorine-containing acrylate of the formula (3) is a fluorine-containing alkyl group which has ether bond and is represented by the formula (3-2):



(3-2)

wherein t5 is an integer of 1 to 5.

9. The composition of Claim 7 or 8, which further contains (c) a photoradical generator in addition to the fluorine-containing acrylate (a3), polyfunctional acrylate (a4) and rare earth metal compound (b).

10. The composition of any of Claims 7 to 9, wherein the rare earth metal compound (b) is a rare earth metal complex.